

# Multiple Intestinal Perforation and Necrosis due to Magnet Ingestion

## Çoklu Mıknatıs Yutulması Nedeniyle Bağırsak Perforasyonu ve Nekroz

Tamer Sekmenli, İlhan Ciftci



### ABSTRACT

Among the few foreign bodies swallowed, multiple magnets are very rare. Ingestion of Multiple Magnets may lead to a number of dire complications. The present case report is about the ingestion of multiple singing magnets by 4-year-old child leading to intestinal segmental necrosis and perforations.

**Keywords:** Multiple magnet, ingestion, perforation, child

### Öz

Yutulan yabancı cisimler arasında çoklu mıknatıs yutumu son derece nadirdir. Çoklu mıknatısların yutulması bir dizi ciddi komplikasyonlara neden olabilir. Biz çoklu mıknatıs yutumuna bağlı intestinal segmental nekroz ve perforasyonların olduğu 4 yaşındaki erkek hastayı sunmayı amaçladık.

**Anahtar Kelimeler:** Çoklu mıknatıs, yutma, perforasyon, çocuk

### Introduction

Foreign body ingestion is a quite common occurrence in children under the age of five [1]. Generally, coins have the highest incidence among the objects swallowed by children. The vast majority of the ingested foreign bodies leave the digestive system naturally without the need for any interference. Among the foreign bodies swallowed, multiple magnets are very rare. However, swallowing multiple magnets may have dire consequences such as intestinal obstruction and intestinal necrosis resulting in perforation and peritonitis [2]. In the presence of symptoms such as abdominal pain, vomiting, or fever, surgical assessment is indicated immediately [3]. Early diagnosis and intervention is extremely important due to possible life-threatening clinical conditions stemming from intestinal perforation, fistula, and ileus risk.

The present case study presents the treatment and clinic progress of ileus in a 4-year-old boy with intestinal segmental necrosis and perforation caused by multiple magnet ingestion.

### Case Report

A 4-year-old male patient was referred with abdominal pain and vomiting complaints to Selçuk University Pediatric Surgery Clinic in the evening, 36 hours after ingesting multiple magnets. He had a respiratory rate of 26 breaths per minute, 100% saturation in room air, and a heart rate of 98 beats per minute. He was warm and well perfused with a capillary refill of 2 seconds.

He was immediately hospitalized and necessary fluids were infused after establishing vascular access. A nasogastric tube was inserted due to bilious aspirates. As there was neither an indication of pneumoperitoneum nor an improvement in the radiography in the ileus table despite enema application, the patient was considered for surgery (Figure 1a). Laparotomy was initiated using a transverse right infra-umbilical incision. During the surgery, necrosis of the affected bowel mesentery was noted, starting 90 cm proximal from the terminal ileum and continuing for 50 cm (Figure 1b), and four crater-like punch hole jejunal mucosa perforations were present in this portion of bowel (Figure 2c, d). There was one jejunal perforation 50 cm proximal to this



Department of Pediatric Surgery, Selçuk University School of Medicine, Konya, Turkey

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Correspondence to: Tamer Sekmenli

E-mail: tamersekmenli@gmail.com

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area and 50 cm distal to the Ligament of Treitz. This perforation was repaired primarily. With several areas of necrosis and four perforations, the 50 cm jejunal segment was excised, end-to-end anastomosis was performed, and catheter drainage was placed into the operative site. Nine magnets were removed from the intestines during the operation: eight of them were round, and one was flat (Figure 2e).

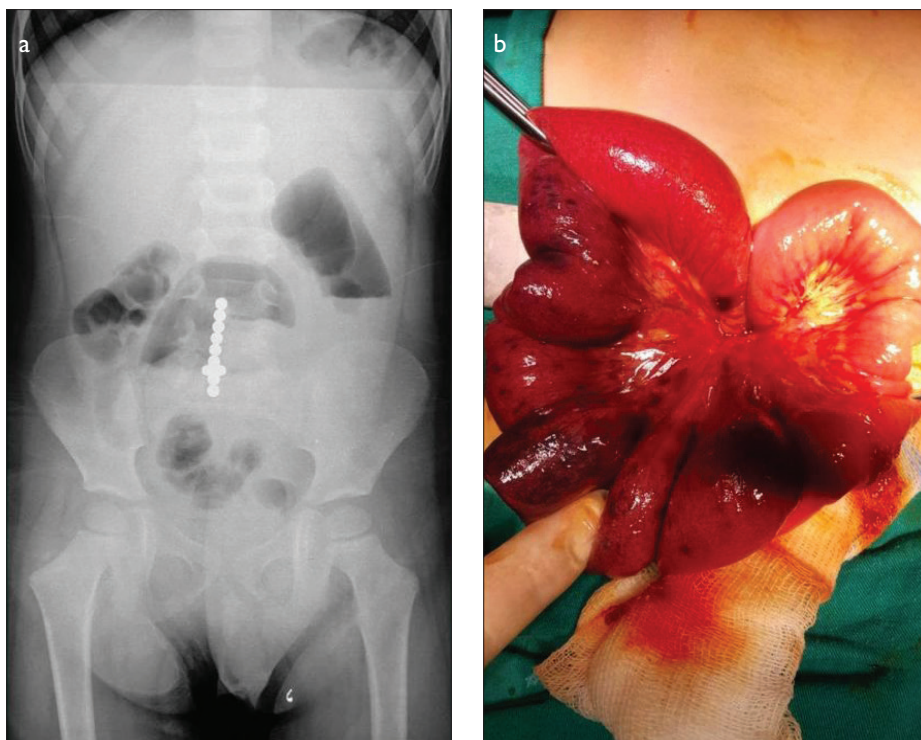
The patient was nourished with liquids until the 4th postoperative day. The catheter was removed when the patient tolerated solid nutrients on the 5th postoperative day, and the patient was discharged on the 6th day. The patient's informed consent was obtained. There were no complications during the 6-week postoperative follow-up.

## Discussion

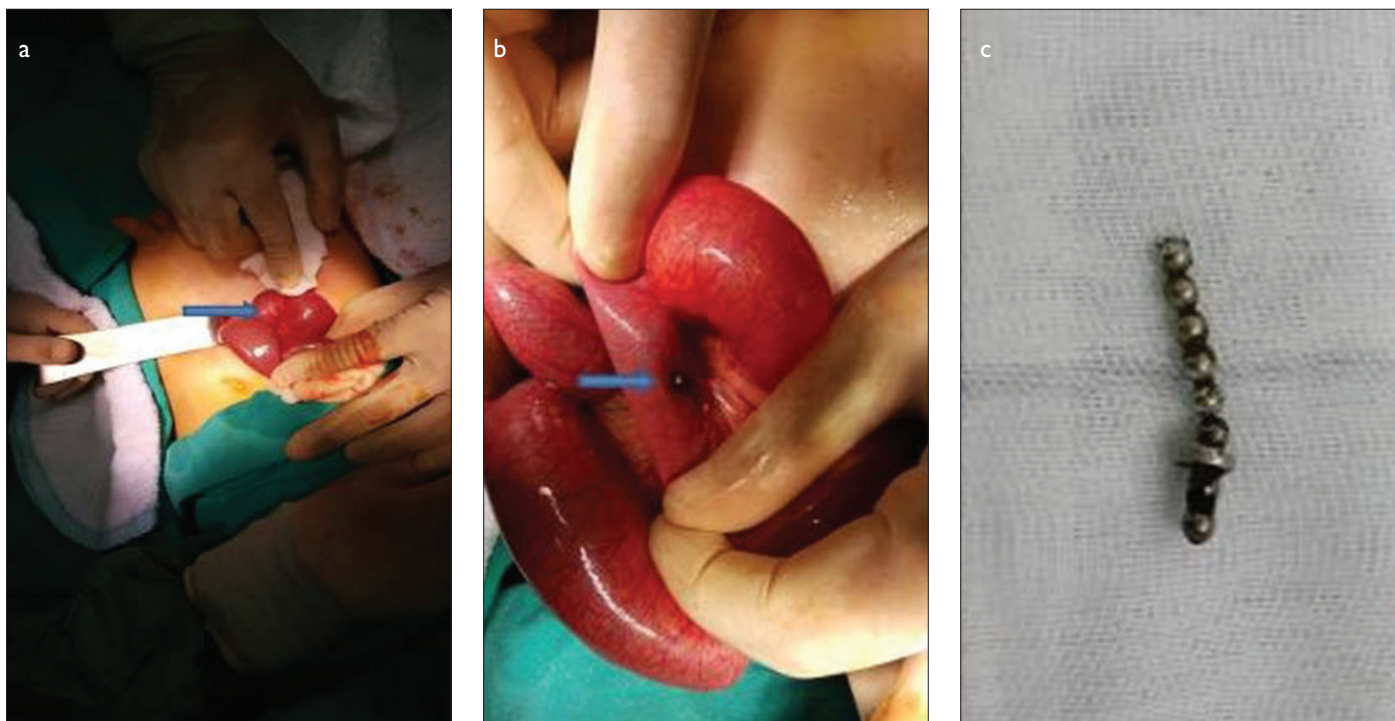
The first report on magnet ingestion was written in 1995 by Honzumi about gastrointestinal complications produced by multiple magnet ingestion [4]. His patient was a 3-year-old girl with jejuno-ileal fistula due to multiple ingested magnets. The majority of complications can be attributed to the adjacent segments of small bowel wall necrosis with fistulation caught between two magnets or one magnet and another metal body [5]. A single magnet ingested does not pose a problem because it behaves just as an isolated foreign body.

Intestinal perforation and death are increasing because the incidence of swallowing magnets is increasing [6]. The underlying reason for the increase in magnet ingestion cases is the easy access to cheap toys with magnetic elements [7]. Many of them are poorly wrapped in plastic molds and can be easily detached [8]. Because of ingredients such as iron, boron, and neodymium, new-generation magnets are ten times stronger than standard iron magnets. They are more commonly used in toys, which lead to a higher incidence of swallowing them, for various small toys, they are dangerous for children [9, 10].

If there is a magnet passage, control is enough in treatment, but if two or more magnets are in the esophagus and stomach, they must be removed urgently by endoscopy.



**Figure 1. a, b.** Radiography in the ileus table (a) intestinal necrosis due to magnets (b).



**Figure 2. a-c.** Intestinal perforation due to magnets.

In conclusion If the patient's family is certain that magnets have been ingested and clinical symptoms such as vomiting and fever present, losing precious time by observing the patient will be unfavorable for the patient. Hence, in case of multiple magnet ingestion, even if the magnets have passed through the stomach spontaneously, they should be removed immediately by laparotomy before serious complications occur.

**Informed Consent:** Written informed consent was obtained from the patient parents.

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